UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/594,926	04/30/2008	Francesca Levi-Schaffer	32379	5770

67801 7590 10/01/2010

MARTIN D. MOYNIHAN d/b/a PRTSI, INC.
P.O. BOX 16446
ARLINGTON, VA 22215

EXAMINER	
ROONEY, NORA MAUREEN	

ART UNIT	PAPER NUMBER
1644	

MAIL DATE	DELIVERY MODE
10/01/2010	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/594,926	LEVI-SCHAFFER ET AL.	
	Examiner	Art Unit	
	NORA M. ROONEY	1644	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *29 September 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *42-55* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *42-55* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *29 September 2006* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *09/29/2006, 09/16/2009, 01/25/2010, 08/16/2010*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. Claims 42-55 are pending and under consideration as they read on a bi-specific antibody comprising: (i) a, first target recognition component which specifically binds to the inhibitory receptor IRp60 or homologues thereof; and (ii) a second target recognition component which specifically binds to a marker specific for a mast cell, an eosinophil and/or a basophil and methods of treating diseases or conditions associated with mast cell, eosinophil or basophil mediated reactions.

2. Applicant's IDS documents filed on 09/29/2006, 09/16/2009, 01/25/2010 and 08/16/2010 are acknowledged. However items on the IDS documents filed on 01/25/2010 and 08/16/2010 have been crossed off because they are not publications with publication dates, though they have been considered. The other documents have been crossed off and not considered because they were not supplied in the application.

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4. Claims 42-55 *are* rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for: a bi-specific antibody comprising: (i) a, first target recognition component which specifically binds to the inhibitory receptor IRp60; and (ii) a second target recognition component which specifically binds to IgE, cKIT, CCR3, IL-5R or FcRI and a method of treating allergies comprising administering a bi-specific antibody comprising: (i) a, first target recognition component which specifically binds to the inhibitory receptor IRp60; and

(ii) a second target recognition component which specifically binds to IgE, cKIT or CCR3, the specification does not provide reasonable enablement for: **a bi-specific antibody** comprising: (i) a, first target recognition component which specifically binds to the inhibitory receptor IRp60 **or homologues thereof**; and (ii) a second target recognition component which specifically binds to **a marker specific for a mast cell, an eosinophil and/or a basophil** of claim 42; **wherein a binding of said antibody to said cell inhibits allergic-type reactions** of claim 43; wherein **said marker may be selected from the group consisting of immunoglobulins, Fc receptors, cytokine receptors, growth factor receptors, adhesion molecules, Ig-superfamily receptors, chemokine receptors, inflammatory mediator receptor, hormone receptors, complement factor receptors, protease-activated receptors and enzymes** of claim 46; **a pharmaceutical composition** comprising as an active agent **the bi-specific antibody** of claim 42 of claim 50; a method of **treating a disease or condition associated with mast cell and/or eosinophil and/or basophil mediated reactions**, the method comprising administering to **a subject in need thereof** a therapeutically effective amount of **a bi-specific antibody, wherein said bi-specific antibody comprises: (i) a, first target recognition component which specifically binds to the inhibitory receptor IRp60 or homologues thereof; and (ii) a second target recognition component which specifically binds to a marker specific for a mast cell, an eosinophil and/or a basophil,** thereby **treating the disease or condition associated with mast cell and/or eosinophil and/or basophil mediated reactions** of claim 52; **wherein said disease or condition is selected from the group consisting of: allergic asthma, allergic rhinitis, allergic conjunctivitis, atopic dermatitis and atopic eczema, allergic disorders and responses to various allergens, systemic anaphylaxis, systemic mastocytosis, morphea/urticaria**

pigmentosa, mast cell leukemia, atherosclerosis, graft rejection, multiple sclerosis, fibrotic lung diseases, neurofibromatosis, keloids, scleroderma, rheumatoid arthritis, osteoarthritis, acute gout, ocular cicatricial pemphigoid, Crohn's disease, peritoneal adhesions, chronic graft versus host disease (GVHD), eosinophil myalgia syndrome, bronchial asthma, nasal polyposis, Wegener's granulomatosis, interstitial and other pulmonary diseases, chronic eosinophilic pneumonia, hypersensitivity pneumonitis, allergic bronchopulmonary aspergillosis, sarcoidosis, idiopathic pulmonary fibrosis, neoplastic and myeloproliferative diseases, T cell lymphomas and Hodgkin's disease of claim 53; **wherein said disease or condition is derived from eosinophil hyperactivity or hyperplasia** of claim 54; and **wherein said conditions are selected from the group consisting of extrinsic bronchial asthma, allergic rhinitis, onchocercal dermatitis, atopic dermatitis, nasal polyposis, nodules, eosinophilia, rheumatism, dermatitis, and swelling (NERDS), vasculitic granulomatous diseases; temporal vasculitis, Churg-Strauss syndrome, polyarteritis, Wegener's granulomatosis, multiple sclerosis, graft rejection, bronchial asthma, interstitial and other pulmonary diseases, eosinophilic pleural effusions, transientpulmonary eosinophilic infiltrates (L6ffler), histiocytosis, chronic eosinophilic pneumonia, hypersensitivity pneumonitis, allergic bronchopulmonary aspergillosis, idiopathic pulmonary fibrosis, topical eosinophilia, cat scratch disease, afebrile tuberculosis, chlamydial pneumonia at infancy, neoplastic and myeloproliferative diseases, bronchogenic carcinoma, hypereosinophilic syndrome, T cell lymphomas and Hodgkin's disease, Crohn's disease, vernal keratoconjunctivitis, juvenile inflamed conjunctivitis nevus, Kimura's disease, Gleich's disease** of claim 55 and as applied to claims 44-45 and 47-48. The specification does

not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and or use the invention commensurate in scope with these claims.

The specification disclosure does not enable one skilled in the art to practice the invention without an undue amount of experimentation.

Factors to be considered in determining whether undue experimentation is required to practice the claimed invention are summarized *In re Wands* (858 F2d 731, 737, 8 USPQ2d 1400, 1404 (Fed. Cir. 1988)). The factors most relevant to this rejection are the scope of the claim, the amount of direction or guidance provided, the lack of sufficient working examples, the unpredictability in the art and the amount of experimentation required to enable one of skill in the art to practice the claimed invention.

The specification discloses a bi-specific antibody comprising: (i) a, first target recognition component which specifically binds to the inhibitory receptor IRp60; and (ii) a second target recognition component which specifically binds to IgE, cKIT, CCR3, IL-5R or FcRI.

The specification does not adequately disclosed a bi-specific antibody that binds to a homologue of IRp60 comprising undisclosed sequence so long as the homologue is homologous over any portion of IRp60. Without guidance in the specification as to what areas are important for function, antibodies binding the resulting homologues will have unpredictable activities and

binding properties. The art of Lerner et al. (PTO-892; Reference U) teaches that an antibody binding epitopes may be as small as 6-15 amino acid residues (In particular, whole document). Therefore, the claims encompass antibodies specific to portions of homologues that are unrelated to IRp60. The genus of antibodies encompassed will have unpredictable use in the disclosed therapeutic purposes.

The specification has not adequately disclosed the genus of bi-specific antibodies specific for any "marker specific for a mast cell, an eosinophil and/or a basophil" that can be used in the disclosed therapeutic purposes. At the outset, until all markers of all cells are found, one cannot know if a particular marker is specific for any particular kind of cell. Furthermore, the genus of recited markers encompasses presently undiscovered markers and the specification does not adequately disclose the genus of markers that can be used in the claimed invention for therapeutic purposes. The specification is enabled for a bi-specific antibody comprising: (i) a, first target recognition component which specifically binds to the inhibitory receptor IRp60; and (ii) a second target recognition component which specifically binds to IgE, cKIT, CCR3, IL-5R or FcRI.

The specification has not adequately disclosed the genus of markers specific for mast cell, eosinophil or basophils that can be used in the claimed invention. The art of Bachelet et al. (PTO-892; Reference V) teaches that bi-specific antibodies to kit and IRp60 (CD300A) can be used to inhibit IgE, mast cell activation and stem-cell factor induced murine cutaneous anaphylaxis(In particular, p. 6059, right column). The art of Bachelet et al. (PTO-892; Reference W) teaches that bi-specific antibodies to IgE and IRp60 (CD300A) can be used to

inhibit allergic reactions. The art of Munitz et al. (PTO-892; Reference X) teaches bi-specific antibodies to CCR3 and IRp60 (CD300A) can be used to inhibit allergic eosinophilic airway inflammation (In particular, p. 1386, first paragraph). However, Munitz et al. also teaches that the role of IRp60/CD300A in eosinophil-related diseases is yet to be determined (In particular, page 1385, first sentence). Therefore, there is no evidence to suggest that specification is enabled for the genus of diseases recited in claim 53-55. The specification is at best enabled for the method of treating allergies comprising administering a bi-specific antibody comprising: (i) a, first target recognition component which specifically binds to the inhibitory receptor IRp60; and (ii) a second target recognition component which specifically binds to IgE, cKIT or CCR3 given the results found in the post-dated art.

For all the reasons stated supra, the specification has not adequately disclosed the genus of recited bi-specific antibodies that can be used to inhibit allergic reactions.

Also at issue is whether or not the bi-specific antibodies disclosed will have pharmaceutical use. In view of the absence of a specific and detailed description in Applicant's specification of how to effectively use the genus of bi-specific antibodies encompassed by the instant claims, absence of working examples providing evidence which is reasonably predictive that the claimed compositions are effective for in vivo use, and the lack of predictability in the art at the time the invention was made, an undue amount of experimentation would be required to practice the claimed pharmaceutical composition with a reasonable expectation of success.

Substantiating evidence may be in the form of animal tests, which constitute recognized screening procedures with clear relevance to efficacy in humans. See Ex parte Krepelka, 231 USPQ 746 (Board of Patent Appeals and Interferences 1986) and cases cited therein. Ex parte Maas, 9 USPQ2d 1746.

Reasonable correlation must exist between the scope of the claims and scope of the enablement set forth. In view on the quantity of experimentation necessary the limited working examples, the nature of the invention, the state of the prior art, the unpredictability of the art and the breadth of the claims, it would take undue trials and errors to practice the claimed invention.

5. Claims 42-55 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Applicant is in possession of: a bi-specific antibody comprising: (i) a, first target recognition component which specifically binds to the inhibitory receptor IRp60; and (ii) a second target recognition component which specifically binds to IgE, cKIT, CCR3, IL-5R or FcRI and a method of treating allergies comprising administering a bi-specific antibody comprising: (i) a, first target recognition component which specifically binds to the inhibitory receptor IRp60; and (ii) a second target recognition component which specifically binds to IgE, cKIT or CCR3.

Applicant is not in possession of: **a bi-specific antibody** comprising: (i) a, first target recognition component which specifically binds to the inhibitory receptor IRp60 **or homologues thereof**; and (ii) a second target recognition component which specifically binds to **a marker specific for a mast cell, an eosinophil and/or a basophil** of claim 42; **wherein a binding of said antibody to said cell inhibits allergic-type reactions** of claim 43; wherein **said marker may be selected from the group consisting of immunoglobulins, Fc receptors, cytokine receptors, growth factor receptors, adhesion molecules, Ig-superfamily receptors, chemokine receptors, inflammatory mediator receptor, hormone receptors, complement factor receptors, protease-activated receptors and enzymes** of claim 46; **a pharmaceutical composition** comprising as an active agent **the bi-specific antibody** of claim 42 of claim 50; a method of **treating a disease or condition associated with mast cell and/or eosinophil and/or basophil mediated reactions**, the method comprising administering to **a subject in need thereof** a therapeutically effective amount of **a bi-specific antibody, wherein said bi-specific antibody comprises: (i) a, first target recognition component which specifically binds to the inhibitory receptor IRp60 or homologues thereof; and (ii) a second target recognition component which specifically binds to a marker specific for a mast cell, an eosinophil and/or a basophil,** thereby **treating the disease or condition associated with mast cell and/or eosinophil and/or basophil mediated reactions** of claim 52; **wherein said disease or condition is selected from the group consisting of: allergic asthma, allergic rhinitis, allergic conjunctivitis, atopic dermatitis and atopic eczema, allergic disorders and responses to various allergens, systemic anaphylaxis, systemic mastocytosis, morphea/urticaria pigmentosa, mast cell leukemia, atherosclerosis, graft rejection, multiple sclerosis, fibrotic**

lung diseases, neurofibromatosis, keloids, scleroderma, rheumatoid arthritis, osteoarthritis, acute gout, ocular cicatricial pemphigoid, Crohn's disease, peritoneal adhesions, chronic graft versus host disease (GVHD), eosinophil myalgia syndrome, bronchial asthma, nasal polyposis, Wegener's granulomatosis, interstitial and other pulmonary diseases, chronic eosinophilic pneumonia, hypersensitivity pneumonitis, allergic bronchopulmonary aspergillosis, sarcoidosis, idiopathic pulmonary fibrosis, neoplastic and myeloproliferative diseases, T cell lymphomas and Hodgkin's disease of claim 53; **wherein said disease or condition is derived from eosinophil hyperactivity or hyperplasia** of claim 54; and **wherein said conditions are selected from the group consisting of extrinsic bronchial asthma, allergic rhinitis, onchocercal dermatitis, atopic dermatitis, nasal polyposis, nodules, eosinophilia, rheumatism, dermatitis, and swelling (NERDS), vasculitic granulomatous diseases; temporal vasculitis, Churg-Strauss syndrome, polyarteritis, Wegener's granulomatosis, multiple sclerosis, graft rejection, bronchial asthma, interstitial and other pulmonary diseases, eosinophilic pleural effusions, transientpulmonary eosinophilic infiltrates (L6ffler), histiocytosis, chronic eosinophilic pneumonia, hypersensitivity pneumonitis, allergic bronchopulmonary aspergillosis, idiopathic pulmonary fibrosis, topical eosinophilia, cat scratch disease, afebrile tuberculosis, chlamydial pneumonia at infancy, neoplastic and myeloproliferative diseases, bronchogenic carcinoma, hypereosinophilic syndrome, T cell lymphomas and Hodgkin's disease, Crohn's disease, vernal keratoconjunctivitis, juvenile inflamed conjunctivitis nevus, Kimura's disease, Gleich's disease** of claim 55 and as applied to claims 44-45 and 47-48.

Applicant has disclosed only a bi-specific antibody comprising: (i) a, first target recognition component which specifically binds to the inhibitory receptor IRp60; and (ii) a second target recognition component which specifically binds to IgE, cKIT, CCR3, IL-5R or FcRI; therefore, the skilled artisan cannot envision all the contemplated antibody and method possibilities recited in the instant claims. Consequently, conception cannot be achieved until a representative description of the structural and functional properties of the claimed invention has occurred, regardless of the complexity or simplicity of the method.

Adequate written description requires more than a mere statement that it is part of the invention. See *Fiers v. Revel*, 25 USPQ2d 1601, 1606 (CAFC1993). The Guidelines for the Examination of Patent Application Under the 35 U.S.C.112, ¶1"Written Description" Requirement make clear that the written description requirement for a claimed genus may be satisfied through sufficient description of a representative number of species disclosure of relevant, identifying characteristics, i.e., structure or other physical and or chemical properties, by functional characteristics coupled with a known or disclosed correlation between function and structure, or by a combination of such identifying characteristics, sufficient to show the applicant was in possession of the genus (Federal Register, Vol. 66, No. 4, pages 1099-1111, Friday January 5, 20001, see especially page 1106 3rd column).

Vas-Cath Inc. v. Mahurkar, 19 USPQ2d 1111, makes clear that "applicant must convey with reasonable clarity to those skilled in the art that, as of the filing date sought, he or she was in possession of the invention. The invention is, for purposes of the written description inquiry,

whatever is now claimed." (See page 1117.) The specification does not "clearly allow persons of ordinary skill in the art to recognize that [he or she] invented what is claimed." (See Vas-Cath at page 1116.). Consequently, Applicant was not in possession of the instant claimed invention. See University of California v. Eli Lilly and Co. 43 USPQ2d 1398.

6. No claim is allowed.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nora M. Rooney whose telephone number is (571) 272-9937. The examiner can normally be reached Monday through Friday from 8:30 am to 5:00 pm. A message may be left on the examiner's voice mail service. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ram Shukla can be reached on (571) 272-0735. The fax number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

September 29, 2010

Nora M. Rooney

Patent Examiner

Technology Center 1600

/Nora M Rooney/

Primary Examiner, Art Unit 1644